

When Does Power Corrupt? Reactions to Uncertainty and Moral Decisions

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By Raissa Woudenberg

University of Canterbury

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Research Supervisors

Dr Kyle Nash, University of Canterbury

Dr Kumar Yogeeswaran, University of Canterbury

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ABSTRACT

The term “power corrupts” has been recognised since it was first termed by David Kipnis in 1972. Individuals with a sense of power are goal oriented, and confident. However, these traits have also been related to selfishness and immoral behaviour, giving evidence for the theory that power corrupts. Individuals are also known to more strongly adhere to cherished beliefs and values when experiencing an uncertain or anxious event. Termed as reactive approach motivation, this theory suggests that individuals turn to cherished beliefs and values to create a tunnel vision effect, and distract from the negative psychological and physiological effects of uncertainty. Therefore, in the current research, we expect individuals with a high sense of personal power to become more goal-oriented and selfish, when made to feel anxious and uncertain. Participants were asked to complete personality scales, followed by being assigned to one of two conditions where they partook in an anxiety manipulation, and finally participating in the ‘Broken Promise Paradigm’, an economic money game where individuals could be dishonest to manipulate a monetary reward. Data was collected in a lab environment, with participant’s also contributing electroencephalography data while wearing EMOTIV EPOC headsets. The results of the moderated multiple regression, and event-related potential (P300) brain data analysis, indicated that power does not always corrupt, and that power and anxiety did not significantly affect an individual’s honesty and morality. We may therefore conclude that it is not an individual’s sense of power that corrupts, but more likely an individual’s values, traits and beliefs that are most salient to them. Outcomes of the study were discussed in terms of their implications whilst recommendations for future research relating power and anxiety were made.

CHAPTER ONE

INTRODUCTION

1.1 Overview

Donald Trump. Business owner, celebrity, billionaire and now the 45th President of the United States of America, has raised a lot of questions on his path to power, such as how he has managed to be publically elected with his extreme personality, values, and beliefs. Described by psychologist Dan P. McAdams, as narcissistic and extraverted with a non-agreeable personality, he has now gained one of the most powerful positions in the world (McAdams, 2016), pursuing his goals relentlessly. It is this pairing of an individual with a high sense of power, and the accompanying traits in a position such as President of the United States of America that re-engages us to the phrase “power corrupts”. Based off the famous quote by Lord John Dalberg-Acton that “power tends to corrupt and absolute power corrupts absolutely”, David Kipnis (1972) furthered this observation and restated the idea that “power corrupts”. This was based on the mannerisms most often associated with holding a position of power, or the psychological feeling of power, which allows the individual influence of others. These characteristics may allow an individual to act in a negative way without consequence to themselves, and it is therefore important to understand how someone with a high sense of power may make corrupt decisions. Understanding individuals with power, and their differences will also help to improve our understanding of who is likely to become corrupt, and when. By understanding these individual differences, we can decipher the traits that are most likely to corrupt, such as personality differences, or cherished beliefs and values. As previous research has shown, not only does power not always corrupt (Overbeck & Park, 2001), but, other personality traits are also related to being corrupt (Baumeister, Smart, & Boden, 1996). Research on power has found that individuals who have a sense of power are goal oriented,

and confident, and these traits have been related to negative behaviours, such as selfishness. It is therefore important to understand when power corrupts. Our fundamental assumption, based on a neuropsychological account of goal regulation, is that power will corrupt, primarily under the threat of uncertainty.

1.2 Power and Personality

It is important to understand what power is, and how it is able to create an environment for individuals to become goal oriented. Most commonly, it is defined as the ability to withhold or administer valued resources in a social relationship, which, as a consequence gives the individual with power the capacity to influence (C. Anderson & Berdahl, 2002; C. Anderson, John, & Keltner, 2012; Galinsky, Magee, Inesi, & Gruenfeld, 2006; Galinsky, Rucker, & Magee, 2015; Keltner, Gruenfeld, & Anderson, 2003; Lammers, Galinsky, Dubois, & Rucker, 2015). Research by French and Raven in 1959, described six bases of power which they suggested explained the social influence that power allowed. They defined social influence as “a change in belief, attitude or behaviour of a person – the target of influence, which results from the action, or presence, of another person or group of persons – the influencing agent” (French, Raven, & Cartwright, 1959; Raven, 1992, p. 218; 2008). They suggested that power could be used to coerce people into acting, as well as using reward and punishment techniques as a way to insure certain acts. While certain acts of behaviour change may occur due to information, legitimacy, expertise or referent power, where subordinates may act due to belief in the power holder’s actions (French et al., 1959; Raven, 1992).

At the individual level, power has been related to numerous personality characteristics and behavioural traits, such as increased self-esteem, extraversion, increased social skills such as charisma, being more approach motivated, as well having an increased focus on the self (C. Anderson & Berdahl, 2002; Galinsky et al., 2015; Keltner et al., 2003; Lammers et al., 2015).

Each of these traits link to power in a way that allow us to predict who may obtain power, and which individuals are most likely to hold a position of power. Self-esteem for example, is an evaluative attitude toward the self (Wojciszke & Struzynska-Kujalowicz, 2007). Power and self-esteem have been found to have a reciprocal relationship, such that having high self-esteem is predictive of gaining a position of power or the influential abilities associated with power, as well as the position of power increasing an individual's positive evaluations of the self (Wojciszke & Struzynska-Kujalowicz, 2007). Previous research has found positive correlations associated with power and self-esteem, with studies finding that individuals with feelings of personal power reported significantly high ratings of self-esteem (C. Anderson et al., 2012; Fast, Gruenfeld, Sivanathan, & Galinsky, 2009). The theories behind this and the reciprocal relationship between power and self-esteem is, that for an individual to be able to have a stable and consistent influence over subordinates, they must have the belief in themselves that they are entitled to the role (Wojciszke & Struzynska-Kujalowicz, 2007). They must also have the sense of having the right to control and influence, adding to an individual's sense of self-esteem (Fast et al., 2009).

Power is also related to aspects of the "Big5" personality factors, mainly extraversion and neuroticism (C. Anderson, John, Keltner, & Kring, 2001; Judge, Bono, Ilies, & Gerhardt, 2002; Keltner et al., 2003; Kraus, Chen, & Keltner, 2011; Wojciszke & Struzynska-Kujalowicz, 2007). An individual who is neurotic, experiences an increased amount of negative emotions such as stress, anxiety, depression, insecurity, and hostility, as well as showing poor adjustments of emotions (C. Anderson et al., 2001; Galinsky, Gruenfeld, & Magee, 2003; Judge et al., 2002). Traits of neuroticism are often seen negatively and are not desired characteristics. They are therefore seldom related to individuals who hold a position of power, which is seen as desirable (C. Anderson et al., 2001). Individuals who hold a position of power, are often in a competitive position with other individuals who are also trying to gain a position of power.

It is therefore important for the power holder to be low in the trait of neuroticism, and have high emotional stability. Being emotionally stable allows power holders to have an advantage in high pressure and stressful situations (C. Anderson et al., 2001), as well as being able to hold their position by showing their ability to adjust effectively as needed, and thereby confirming their position of power (C. Anderson et al., 2001).

The term extraversion refers to the energy which is associated with individuals who are seen as extraverted, an early definition explained extraversion as: “an energetic approach to the social and material world” (John & Srivastava, 1999, p. 121). It is this energy and sociability which leads individuals to be more outgoing in expressing their valued attributes, as well as their charismatic qualities making them seem as desirable individuals (C. Anderson et al., 2001; John & Srivastava, 1999). Extraversion is a trait that is commonly associated with leadership, status, and power, as well as being associated with being predictive of leadership and powerful roles (C. Anderson & Berdahl, 2002; C. Anderson et al., 2012; Judge et al., 2002; Smith & Bargh, 2008). Individuals who are extraverted are more sociable, outspoken, assertive, and goal-seeking (C. Anderson et al., 2012; C. Anderson et al., 2001; Judge et al., 2002). Not only do extraverts make themselves seem more valuable (C. Anderson et al., 2001), but, the trait of extraversion is also predictive of individuals obtaining leadership roles (Judge et al., 2002).

Previous research looking at the traits of neuroticism and extraversion have found numerous significant relationships. First, John and Srivastava (1999) classified which personality descriptors were best associated with the “Big5” traits. Individuals high in extraversion were most associated with being: talkative, assertive, active, energetic and outgoing. While individuals low in neuroticism, so high in emotional stability are associated with being: stable, calm, contented and unemotional (John & Srivastava, 1999, p. 113). All of these match the traits most often seen in individuals who are in a position of power. Anderson, John, and Keltner (2012) looked at the relationship between the personal sense of power and

relevant personality constructs. They found that both extraversion and neuroticism were positively correlated to a personal sense of power (C. Anderson et al., 2012). While Anderson, John, Keltner, and Kring (2001), looked at the gender differences of relevant personality constructs to power. They found that extraversion was significantly related to both the possession of power, as well as being predictive of holding a position of power in both females and males. While neuroticism in males was significantly related to the possession of power, and, as a predictive factor of power, they found that it was not a significant factor for females (C. Anderson et al., 2001).

Power decreases dependency on others and allows individuals to become more approach oriented, and more focused on potential rewards (Keltner et al., 2003). Because of this lack of dependency, individuals are able to focus on potential rewards and better adjust their behaviours to obtain these goals more efficiently (Keltner et al., 2003; Smith & Bargh, 2008). This has also been related to the behavioural inhibition and activation systems; two neurological systems that respond to environmental stimuli (Carver & White, 1994). For individuals with a high sense of power, the approach system is activated; this allows for better goal approach and attainment. The inhibition system in individuals with a low sense of power is activated, as they are more dependent on other individuals for resources, and therefore do not readily approach goals due to the potential consequences (C. Anderson & Galinsky, 2006; Galinsky et al., 2015; Keltner et al., 2003; Lammers et al., 2015; Langner & Keltner, 2008). High and low power both create environments which allow or disallow opportunity for obtaining and approaching goals. An individual in a low power environment is restricted by their dependency on others, which causes them to be more aware of potential threats and therefore activating their inhibition system causing them to be more vigilant (C. Anderson & Berdahl, 2002; Smith & Bargh, 2008; Smith & Galinsky, 2010).

Previous research has found strong evidence for the relationship between power and the behavioural inhibition systems. For example, studies that have primed power have found a positive relationship with the approach and inhibition systems, as well as individual's personal sense of power in relation to the behavioural inhibition and activation systems. Smith and Bargh (2008) primed individuals with low or high power and found that individuals who were primed with high power became more approach motivated, but the low power prime did not make individuals more inhibited. However, in a follow up study, they found that individuals primed with low power were significantly slower to approach a stimulus than their high power primed counterparts. Galinsky, Gruenfeld, and Magee (2003) did multiple studies to test the theory of elevated power and increased behavioural approach. They found that individuals who were given a position of power were more likely to act in a game of blackjack, compared to those given the role of a subordinate, even when the game of blackjack was not related to the role of power. They also found that when participants were made to recall an event that put them in a position of elevated power, they were more than twice as likely to turn a fan off that was blowing in their face, compared to those who were asked to recall an event where they were put in a position of low power. These studies show that when individuals are put in a position of power or made to feel a sense of power, they are more likely to approach potential rewards, while individuals in a low power position become more inhibited and therefore are less likely to approach potential rewards.

David Kipnis (1972), termed power as corruptive, and suggested that “power increases the likelihood that the individual will attempt to influence and manipulate others” (Kipnis, 1972, p. 39). Due to the traits that most individuals with power hold, for example; the charismatic qualities associated with extraversion, the self-assurance of a high self-esteem, and emotional stability that low neuroticism enables, as well as increased approach motivation, powerful individuals will more easily, and without consequence, be able to manipulate others,

as well act in ways that may not be socially acceptable. Previous research has also given evidence, that not only does power on its own corrupt, but that certain personality traits can also have negative consequences. For example, Baumeister, Smart, and Boden (1996), found that individuals with high self-esteem may cause an individual to be more prone to violence. This is because individual's with high self-esteem are strongly self-oriented, and do not cope well when their ego is threatened; for example, if another individual has an unfavourable appraisal that does not add up to their own self appraisals (Baumeister et al., 1996). Human aggression studies have also found similar findings that, individuals of high self-esteem are more prone to aggressive behaviours compared to individuals with low self-esteem (C. A. Anderson & Bushman, 2002). Further, aspects of the Big5 personality traits have been related to police performance. Girodo (1991) found that disciplinary problems, as well as drug and alcohol abuse, were positively correlated with neuroticism, and extraversion, with individuals scoring high on both scales being at the highest risk on the studies corruption index (Girodo, 1991). Another study found that at the national level, countries who were rated higher in neuroticism were more corrupt (Connelly & Ones, 2008).

Contradictory to the aforementioned theory, researchers have also found that a sense of power is not always associated with negative consequences (Chen, Lee-Chai, & Bargh, 2001; Overbeck & Park, 2001). Chen et al (2001) found that the effects of power were dependent upon individual's values. For example, individuals who were communally oriented were found to link power with responsibility goals, therefore they were responsible, attentive, and responsive to other individual's views and needs, when primed with power. Individuals who were exchange oriented, that is, see the benefits that other individuals hold for them, contrarily linked power to self-interested goals (Chen et al., 2001). For example, when these individuals were primed with power they were found to behave in ways which emphasised their own interests and goals. Another study found that even though high powered individuals have

previously been accused of being less attentive toward other's, and more likely to stereotype, this is not always true (Overbeck & Park, 2001). Overbeck and Park (2001) found that when high and low powered individuals were asked to recall details from a lab task, the high powered individuals actually recalled more information, and were less stereotypical, in contrary to what other research has found.

It is this suggestive corruptness of power, and its associated personality traits that hint that power holders are more immoral than non-power holders (Lammers et al., 2015; Lammers, Stapel, & Galinsky, 2010). Because power holders are more behaviourally activated, they are more likely to follow personal goals and are therefore more self-oriented, while the independence of power also shields them from negative aspects of acting immorally or outside of the norms (Lammers et al., 2015; Lammers et al., 2010).

1.3 Uncertainty and Reactive Approach Motivation

Goal pursuit is a fundamental part of all organism's life cycle, as it motivates intentional reward based behaviour while avoidance behaviour saves organisms from unpleasant, or threatening stimuli (Elliot, 2006). Anxiety is an uncomfortable affect caused by goal conflict. The prototypical goal conflict is the approach avoidance conflict, for example, the classic conflict of whether to approach an individual who you may be romantically interested in, while also wanting to avoid rejection (Gray & McNaughton, 2003; Mathew, 1982). The anxiety is characterised by symptoms such as increased apprehension, tension, and vigilance, furthering an organism's ability to approach more viable goals (Gray & McNaughton, 2003; Mathew, 1982; McGregor, Prentice, & Nash, 2013). Approach behaviour also helps organisms distract from situations of uncertainty (Hirsh, Mar, & Peterson, 2012). For example, in mice, it has been found that when they are exposed to an alpha male after being in a stressful situation they increase their wheel-running behaviour as a type of displacement behaviour to reduce their

anxiety (Uchiumi, Aoki, Kikusui, Takeuchi, & Mori, 2008). Approach behaviour however, does not necessarily resolve the original goal conflict, but resolves the conflict of uncertainty. For example, if an individual becomes anxious due to not being able to understand and complete a work task, they could more strongly adhere to focusing on another task. For example, they may focus their attention instead on personal goals in a sporting or gym environment, thereby distracting from the uncertainty arising from being unable to complete the work task. This type of displacement behaviour that arises when uncertainty and anxiety occurs has been theorised by numerous researchers.

Reactive approach motivation (RAM), first developed by McGregor, Zanna, Holmes and Spencer (2001), hypothesised that individuals who were threatened with personal uncertainty, would become extreme in their attitudes, personal goals, values, and in their own identity (McGregor, Zanna, Holmes, & Spencer, 2001). In their original research, they found evidence that individuals did in fact become more extreme in their attitudes toward personal values, as well as becoming more focused on the self when made to feel uncertain. It is the practise of individuals adhering to personal values and goals more strongly, as described above that enables us to distract from uncertain situations (McGregor, Nash, Mann, & Phills, 2010; Nash, McGregor, & Prentice, 2011; Schumann, McGregor, Nash, & Ross, 2014). Uncertainty generally arises as a consequence of goal conflicts, and is commonly experienced as anxiety (Hirsh et al., 2012). When uncertainty occurs it activates both the approach and avoidance systems simultaneously (Gray & McNaughton, 2003; McGregor, Haji, Nash, & Teper, 2008), therefore, individuals become extreme in their beliefs and values to create a tunnel vision approach towards a goal. Consequently, this reduces the effects of the simultaneously activated approach and avoidance systems (McGregor et al., 2010). This technique occurs when individuals cannot directly ease the source of uncertainty. They therefore commit to either an

ideal, religious belief, or behave in an extreme way to mute the feelings of uncertainty (McGregor et al., 2013; Schumann et al., 2014).

Previous research has found that RAM is most likely to activate when uncertainty occurs due to a salient goal that is important to the individual (Nash et al., 2011). For example, research involving mortality salience, religious beliefs, as well as causing uncertainty through an academic task with undergraduate students. A meta-analysis done by Burke, Martens, and Faucher (2010), found that overall, when participants were primed with mortality salience they were more likely to show strong worldviews (Burke et al., 2010). Similarly, causing RAM through academic uncertainty in undergraduate students has also been found to be significant due to the awareness of academic achievement and failure that is present in an academic setting. For example, McGregor, Prentice, and Nash (2013), used achievement uncertainty as a predictor of RAM, and found that individuals in the anxiety inducing condition showed significantly more extreme religious idealism. A pilot study revealed the effectiveness of the achievement uncertainty manipulation, and found that participants in the anxiety inducing condition were significantly more likely to report feeling uncertain (McGregor et al., 2008).

The theory of RAM is complemented and supported by numerous other studies. For example, Cognitive Dissonance Theory which was first introduced by Leon Festinger in 1957 proposed that individuals act a certain way even if they know the negative consequences associated with their actions. (e.g., an individual who continues to smoke, despite being aware of the negative health consequences; Festinger, 1957; Jonas et al., 2014). Cognitive Dissonance Theory suggests that individuals will continue to act in ways that they know are unwise, because they crave consistency, and changing ones behaviour would cause anxiety, so by distorting ones thoughts and reinforcing behaviour, (e.g., by telling ourselves that smoking is too enjoyable to stop), we cover up our feelings of uncertainty by reinforcing our own behaviours (Festinger, 1957; Jonas et al., 2014). Other theories such as Terror Management

Theory (Greenberg, Solomon, & Pyszczynski, 1997), the Meaning Maintenance Model (Heine, Proulx, & Vohs, 2006), the Unconscious Vigilance Model (Holbrook, Sousa, & Hahn-Holbrook, 2011), Reactive Approach Motivation (McGregor et al., 2001), and Self-Affirmation (Steele, 1988), have built from this, by also suggesting that we act in certain ways to cover up feelings of anxiety and uncertainty (Jonas et al., 2014). All of the aforementioned theories show parallel evidence that when individuals are made to feel anxious and uncertain, extreme behaviours take place to displace our feelings of anxiety and uncertainty. Reactive Approach Motivation, and the other like theories may help us explain the question of ‘when’ power corrupts, and whether it is feelings of uncertainty that have caused the negative behaviours so often associated with individuals of power. Because of the consequences of uncertainty, we want to know how different individuals are most likely to react based on their personality. For example, individuals high in power are generally extremely goal oriented and self-focused. Therefore, we could conclude, that when given the chance to make a personal gain, they will be more likely than low power individuals to become increasingly selfish and less communally oriented, and consequently more immoral.

1.4 Morality

Moral individuals are generally characterised as caring, genuine, compassionate, fair, generous, helpful, trustworthy, and honest (Aquino & Reed II, 2002; Lapsley & Lasky, 2001; Walker & Pitts, 1998). These traits define an individual who takes consideration of the welfare of others, as well as insuring that others are treated fairly (Graham et al., 2011; Haidt, 2007). However, morality is not just related to how we treat others and want to be treated, it also about how we view the actions of events and individuals that surround us (Haidt, 2001). Most often we have an instant feeling as to whether an action is morally right or wrong, often this is based on the instantaneous emotions that we feel when observing or hearing about an action (Greene & Haidt, 2002; Haidt, 2001). This acceptance is based on a set of moral values that we hold,

which are individually variable, as well as depending upon the social institutions that we are a part of; such as our culture and community (Gössling, 2003; Graham et al., 2011; Haidt, 2001, 2008).

Who is moral, is a question that is still under scrutiny, and there are numerous theories surrounding this question. Lawrence Kohlberg (1973), who developed the stages of moral development, claims that individuals go through different stages of understanding of what motivates an individual's morality, as well as how their understanding of having their own moral values develops (Kohlberg, 1973). The developmental theory has three stages: first, the pre-conventional stage where individual's actions are based on satisfying their own needs, as well as understanding good and bad based on the consequences of their actions. The second stage is the conventional level, where individuals follow the social norms of their community, to show loyalty. They do this by acting in ways that are judged as behaving with good intentions. Finally, the post-conventional, autonomous, or principles level. This level suggests that individuals act in a way that meets the expectations of global values, as well as themselves believing the social importance of their actions (Gössling, 2003; Kohlberg, 1973). These stages also show the different motivations behind an individual's actions. Stages one and two are extrinsically motivated, as they are actions that follow the rules of others, while stage three is intrinsically motivated as it is also related to an individual acting to what they perceive is the right thing to do is (Gössling, 2003; Kohlberg, 1973). An individual who reaches stage three of moral development is said to have an understanding of the "universal principles of justice, of the reciprocity and equality of human rights, and of the respect for the dignity of human beings as individual persons" (Kohlberg, 1973, p. 632). Which is how Kohlberg defined a moral individual.

A second theory is that moral behaviour has developed from evolution, through adaptive behaviour (Haidt, 2007, 2008; Wilson, 1975). This theory was first developed by

Edward O. Wilson (1975), who stated that “the individual is forced to make imperfect choices based on irreconcilable loyalties – between the rights and duties of self and those of family, tribe, and other units of selection, each of which evolves its own code of honour” (Wilson, 1975, p. 129). This suggests that individual intuitions about what is morally right and wrong has been established from positive and negative social interactions, which has established a basis of life in a society strongly designed by social reputations (Haidt, 2007, 2008). This creation of a reputation based society where individuals build relationships by positive interactions, creates a bond for future positive interactions, which therefore reinforces an adaptive environment (Haidt, 2007).

There are also individual differences which predict who is likely to be highly moral. Individuals differ in their personality characteristics, as well as whether they are communally focused, or self-interested. Lawrence J. Walker (1999), was one of the original researchers to establish a connection between specific personality traits and their relation to moral individuals. In this study, participants were asked to write down the traits and attributes that they most strongly related to a highly moral individual (Walker, 1999). These recorded traits were compared to the “Big5” personality factors, and it was found that moral individuals were most associated with individuals who were high in the traits of agreeableness and conscientiousness. An individual who rates high in agreeableness reflects a considerate, generous, and sympathetic person; traits which are related to having a “positive communal emotionality” (Walker, 1999, p. 149). An individual who is conscientious is dependable, task-oriented, responsible, and reliable (Walker, 1999). These associated traits of agreeableness and conscientiousness can also be related to the earlier introduced traits of morality that were established by previous researchers. For example, Walker and Pitts (1998), asked participants to write as many attributes as possible that they thought related to a moral individual, while similar research was conducted by Lapsley and Lasky (2001), and Aquino and Reed (2002). They found very similar

traits such as honesty, caring, hard-working, generosity, conscientiousness, and kindness (Aquino & Reed II, 2002; Lapsley & Lasky, 2001; Walker & Pitts, 1998); all of these encompassing attributes of the big five personality traits of agreeableness and conscientiousness.

The traits associated with being a moral individual do not show a direct alignment with the traits of an individual who has a high sense of power. With distinct differences in salient personality attributes, and values such as selflessness. However, these traits associated with a personal sense of power generally give individuals a distinct advantage over individuals with a low sense of power. They are more likely to obtain goals that they aim for, as well as having personality characteristics that make them more likely to advance socially with other individuals as well as in a professional sense. It is these characteristics however, that also make individuals vulnerable to the concept of “power corrupts”, with this likely to be exacerbated in times of uncertainty and anxiety, through the activation of reactive approach motivation.

1.5 Present Study

In the present study I aim to establish a link between an individual’s personal sense of power, their motivational reaction to an uncertain situation, and how this affects their moral decision making. Previous studies have looked at these factors individually, however, the interaction of the trait of power, reactive approach motivation, and morality is unclear. Previous research on power has shown the selfish side effects that generally arise, as well as the prominent personality traits of extraversion, high self-esteem, and emotional stability that are aligned with a position of power. Though studies of power and morality have found the negative corrupting effects of power, there is a lack of literature interpreting how settings of uncertainty affect decisions in moral dilemmas for individuals of high power. An individual in power is likely to be involved in stressful, and therefore uncertain situations. It is consequently

important to understand how these individuals will react to uncertain situations, due to the control that they hold over subordinates and valued resources.

To test the effects of power and uncertainty on moral decision making, participants first completed personality questionnaires followed by being randomly assigned to one of two conditions in which they either completed an anxiety inducing, or low anxiety task. Following this, participants took part in the Broken Promise Paradigm, a game in which participants have the chance to keep or break a promise regarding a monetary investment. Individual's honesty during the Broken Promise Paradigm was used as our dependent variable for our measurement of morality. Electroencephalography (EEG) data was also collected to determine the effects of the anxious manipulation, and how participants reacted to further stimuli due to the two condition types. Specifically, we indexed event-related potentials (ERPs) sensitive to anxiety and motivational processes (Bressler & Ding, 2006; Polich & Martin, 1992). These ERPs included the P300, and N200 brain waves; positive and negative waves which reflect cognitive functioning (Bressler & Ding, 2006; Patel & Azzam, 2005). Differences in P300 and N200 amplitudes in individuals show differences in vigilance to novel stimuli (for further detail see methods).

We made three predictions based on previous research. First, we hypothesise that high powered individuals who are made to feel anxious, will be more likely to act in a selfish and immoral manner, compared to high powered individuals who are not made to feel anxious. This prediction is based on the theory of reactive approach motivation where individuals made to feel uncertain become extreme in their actions. We would therefore expect high powered individuals who are strongly goal oriented, to be more likely to take extreme actions to gain a reward, even if the actions are dishonest and immoral. Secondly, we expect to see individual differences in the P300 brain wave between individuals in the low anxiety condition, and anxiety inducing condition, and also to see an association between power and the P300. An

interaction effect is also predicted, with high powered individuals in the anxiety-inducing condition showing a smaller peak P300 average than low powered individuals in the anxiety-inducing condition. We expect this due to the moderating effects of power, on the P300. Individuals with a high sense of power are defined by certain traits that also allow them increased cognitive control (e.g., emotional stability). This is compared to individuals with a low sense of power, who after an anxiety-inducing event will become more vigilant, especially toward novel stimuli.

CHAPTER TWO

METHOD

2.1 Participants

Participants were recruited through the first year undergraduate psychology participant pool at the University of Canterbury. Participants received course credit and could earn a monetary reward based on their performance in the broken promise paradigm (see below). A total of 141 students participated, with 28 participants being excluded due to unreliable electroencephalography readings, and 1 excluded due to data error. After exclusions we had a total of 112 participants (30 males, 82 females), for our final analysis. Participants were grouped categorically based on their age, with 81% aged between 17 – 20, 18% aged 21 – 25, 8% aged 26 – 30, 3% aged 31 – 40, and 2% aged 40 plus. Participants were given an information sheet prior to beginning the study, which outlined the tasks they would be participating in and then provided written consent.

2.2 Materials

2.2.1 Demographics

Participants reported their gender (female, male or other), age (17 – 20, 21 – 25, 26 – 30, 31 – 40, and 40 plus), if English was their first language (yes or no), socio-economic status (scale from 1 (low) to 5 (high)), and handedness (left or right).

2.2.2 Personality Questionnaires

The ‘Personal Sense of Power’ (C. Anderson et al., 2012; Keltner et al., 2003) scale was used to gauge how much influence an individual believed they possessed over other individuals, for example: “I can get people to listen to what I say”, and also using reverse scored

questions such as “Even if I voice them, my views have little sway”. Participants answered questions on a 5-point scale ranging from 1 (strongly disagree) to 5 (strongly agree).

The ‘Behavioural Inhibition and Behavioural Activation’ scale (Carver & White, 1994), was used as an indicator of both activation and inhibition behavioural attributes, for example, “I’m always willing to try something new if I think it will be fun”. Reverse scored items were also included in this scale. For our analysis, the items were split based on whether they reported behavioural inhibition or activation, which allowed us to view and analyse these personality attributes separately. This scale was answered on 5-point likert scale from 1 (strongly disagree), to 5 (strongly agree).

The short form ‘Big5’ trait personality scale (Gosling, Rentfrow, & Swann, 2003) was used as a measure of the big five personality traits of extraversion, openness to experiences, agreeableness, conscientiousness, and neuroticism. For our analyses, we used the term “Emotional Stability”, in position of the term “Neuroticism”. This scale allows us to view and analyse each of the big five personality factors individually. Questions were answered on 5-point likert scale from 1 (strongly disagree), to 5 (strongly agree).

The explicit self-esteem scale (M. Rosenberg, 1965) was used as a measure of self-esteem with items such as “I feel that I’m a person of worth”, including reverse scored items such as: “At times I think I am no good at all”. The scale was answered on a 5-point likert scale from 1 (strongly disagree) to 5 (strongly agree).

2.2.3 Emotiv EPOC Headset

We measured neurophysiological responses throughout the duration of the study using the Emotiv EPOC quick application headsets for electroencephalography (EEG) measurement. The headsets take measurements through fourteen electrode points, with individual recordings taken at each point for the selected time period.

2.2.4 Presentation of Materials

Scales and demographics, as well as the anxiety manipulation, auditory oddball paradigm, and the broken promise paradigm were presented through the software E-Prime 2.0. E-Prime 2.0 was able to be manipulated with timed screens, response recordings and task event codes, which allowed a connection between the tasks occurring on E-Prime 2.0, and the EEG readings. Finally, at the completion of the study, participants completed a hard copy of a manipulation check where they recorded how they felt during the completion of the anxiety manipulation.

2.3 Procedure

2.3.1 Introduction to the study

The experiment was run with up to four participants per session. On arrival, participants received an information sheet which outlined the details of the study without revealing the hypotheses. Written consent was acquired to show that participants understood the study they were participating in, and that they agreed for their results and information to be used.

Emotiv EPOC quick application headsets were fitted by measuring the subjects head from the nasion (indent between eyebrows), to the inion (bump at back of the head, where the occipital bone ends). This measurement was divided by 10, and then multiplied by 3. This calculation then gives a reference point for where electrodes F3 and F4 should lie according to the 10/20 system. For example, if the subjects head from nasion to inion is 34cm, a measurement of 10.2cm ($34/10 \times 3 = 10.2\text{cm}$), becomes the reference point for where the F3, and F4 electrodes would be aligned with, based on a second measurement from the nasion. During application of the headset, participants would be given an explanation of what the headset is recording, that there are no side effects of wearing the headsets, and the protocol for wearing the headsets (e.g. minimum movement).

Once participants were set up with headsets and headphones, they were thanked for coming despite their busy schedules and given a brief run-down of the tasks that they will be completing including the questionnaires, a reading and writing task, the listening of auditory stimuli, and lastly the playing of a game. When participants were ready to begin, the electroencephalography (EEG) recording was started, and participants were started on E-Prime 2.0 which was used to record their responses.

2.3.2 Questionnaires and Condition Assignment

Firstly, participants were presented the questions on their demographics and the personality questionnaires, following this the baseline reading for the EEG measurement was taken. Participants were required to watch a fixation point for 1 minute with their eyes open, followed by sitting for 1 minute with their eyes closed; an auditory response prompted them to open their eyes and continue with the next task.

Next, participants were randomly assigned to one of two conditions, as part of an anxiety manipulation based on previous research, and first done by McGregor, Nail, Mangold and Kang (2005). Condition one, the low anxiety condition involved reading and summarising a simple passage from an undergraduate text book on the usefulness of statistics (K. M. Rosenberg, 1990, p. 3). Condition two: the anxiety inducing condition, involved the reading and summarising a statistical procedure called linear structural relations or LISREL (Pedhazur, 1997, pp. 639-640). Participants had a total of three minutes to read the screens with the explanations of the two statistical tools, followed by three minutes to summarise. The academic anxiety manipulation has caused anxiety and defensive behaviour in prior research (McGregor, Nail, Marigold, & Kang, 2005; McGregor et al., 2010; Nash et al., 2011).

2.3.4 Auditory Oddball Paradigm

Following the random assignment to either the low anxiety or anxiety inducing condition, participants completed the auditory oddball paradigm. The oddball paradigm involves static stimuli (the target event) that, infrequently occur amongst a series of repetitive beeps (García-Larrea, Lukaszewicz, & Mauguière, 1992). Individuals listened to a series of these beeps and static noises for a total of three minutes. For our study they were set at a ratio of 1:9 (static: standard), which occurred randomly so that there was no sequence of events. Participants were given instructions at the beginning of the task to stay as still as possible, and a fixation point was shown for the duration of the three minutes to encourage stillness. Reactions toward the standard and startle stimuli are interpreted through electroencephalography readings.

Electroencephalography enables the interpretation of how individuals react to stimuli, as well as being able to compare reactions in individuals in different conditions, or with variations in personality traits. To measure individual's reaction to anxiety we are able to make conclusions based on event-related potentials as seen during the auditory oddball paradigm. Event-related potentials are sensitive to anxiety and motivational processes; they reflect cognitive functioning such as perception and selective discrimination of stimuli, and consist of positive and negative waves, specifically the N200 and P300 waves (Bressler & Ding, 2006; Patel & Azzam, 2005; Polich & Martin, 1992). The N200 wave occurs approximately 180 to 325 milliseconds after a stimulus occurs (Patel & Azzam, 2005), followed by the P300 wave which occurs 300 to 400 milliseconds after the stimulus (Patel & Azzam, 2005; Picton, 1992; Sutton, Braren, Zubin, & John, 1965; Vedeniapin, Anokhin, Sirevaag, Rohrbaugh, & Cloninger, 2001).

When a novel stimulus occurs, our brain allocates resources to this stimulus to perceive it. This occurs as a way to discriminate among threats, rewards or non-relevant events; an evaluation of the environment (Kopp, 2008). These event-related potentials are a type of brain

“refreshment” that happens when a novel stimulus occurs, as indexed by the N200 and P300 waves, occurring so that interpretation of the new stimuli occurs (Polich & Martin, 1992). Interpretation of the P300 wave allows us to understand how a stimulus is evaluated, reflecting the recognition and memory processing of this stimulus (Patel & Azzam, 2005). The peak amplitude of the P300 wave exhibits the speed in which stimuli are classified, showing discrimination between different stimuli (Polich & Martin, 1992; Sutton et al., 1965). There is also evidence of different psychological states, as well as personality trait differences having an effect on the output of the P300 wave (Cahill & Polich, 1992; Patel & Azzam, 2005; Polich & Martin, 1992; Vedeniapin et al., 2001).

The oddball paradigm is a tool that is used to enable the reading of the P300 brain potential. The auditory oddball paradigm is where participants are exposed to a frequent stimulus, as well as a sporadically occurring stimulus which occurs at random intervals among the frequent stimulus (Kopp, 2008; Patel & Azzam, 2005; Picton, 1992). This sporadic stimulus allows us to view the cognitive processing that occurs when a novel stimulus occurs. Previous research has looked at the relationship between event-related potentials, individual personality differences and how they link together. For example, researchers have found P300 amplitude differences between extroverts and introverts, with introverts showing a consistently larger peak P300 amplitude compared to extroverts (Cahill & Polich, 1992; Vorkapic, Tadinac, & Rudez, 2010). These differences have been related to differences in habituation time of introverts and extroverts, with introverts staying more vigilant and therefore maintaining a larger P300 peak (Cahill & Polich, 1992; Picton, 1992; Polich & Martin, 1992; Vorkapic et al., 2010). This is based off the theory proposed by Eysenck (1967) who suggested that introverts and extroverts were neurophysiologically different due to differences in levels of cortical arousal, with introverts being chronically more aroused than extroverts (Cahill & Polich, 1992; Eysenck, 1967; Vorkapic et al., 2010).

2.3.5 Broken Promise Paradigm

Participants then completed the broken promise paradigm (Baumgartner, Fischbacher, Feierabend, Lutz, & Fehr, 2009) as a measure of honesty. Passive deception was used at this stage of the study, where participants were told that they would be playing against another individual in another room, for real money. Participants were playing for a real monetary gain; however, they were not playing against another person.

First, participants were asked to choose a promise level to fit the statement: “I will _____ return your share of the investment”, participants chose from “never, sometimes, mostly, and always”. Second, based on participants answers in step one, the ‘investor’ makes a decision based on a previous study by Baumgartner, Gianotti, and Knoch (2013), that used the same game, but with real investors. If the participant (Player B), promised to “never” share the investment, there was a 100% chance of the investor (Player A) to not send the investment money. If player B promised to “sometimes” share the investment money, there was a 60% chance that they would send the investment money. If the promise was to “mostly” share the investment then there was a 70% chance that they would send the money. Finally, if player B “always” promised to send the investment money then there was a 90% chance that they would send the investment money (Baumgartner, Gianotti, & Knoch, 2013). There was an intermittent screen between the participants promise decision, and the reveal of whether or not the investor would or would not invest in them, where the participant was shown a screen that the investor is making a decision (“Investor 1 is now deciding...), to simulate another person making a live decision. Next, the participants were asked to remember the promise they made at the beginning, before deciding whether to return or keep the fair share (\$5), or keep all of the money (\$10). This was repeated for 9 trials so that we could get an average honesty or deception score for each participant.

2.3.6 Manipulation Check and Debrief

At the completion of the study, participants' headsets and headphones were removed, and participants were asked to fill out a hard copy of the manipulation check. Participants completed a manipulation check based on previous research by McGregor, Nash, Mann and Phillis (2010), at the completion of the study where they were asked to rate how they felt while completing the anxiety manipulation. They recorded how they felt on a scale from 1 (Strongly disagree) to 5 (Strongly agree) for the following emotions; Good, Bad, Friendly, Unfriendly, Angry, Pleasant, Happy, Sad, Smart, Successful, Likeable, Meaningful, Frustrated, Confused, Uncertain, Empty, Anxious, Ashamed, Insecure, Lonely, Stupid, and Out of Control. In addition they answered questions on what they suspected the study was about, and how accurately they believed they answered the required questions in the study (McGregor et al., 2010).

Once the manipulation check was completed, participants were taken aside and were debriefed. They had the study explained in more detail in person as well as having the anxiety manipulation explained, so that no feelings of anxiety would be on going following the completion of the study. They were also given a debriefing sheet so that participants had access to more information, including contact details of counselling and support services if any personal issues arose in completing this study.

2.4 Design

2.4.1 Primary Analyses

To test the main effects, a moderated multiple regression was conducted as done by Aiken, West, and Krull (1996), to analyse both continuous and categorical interactions. The independent variables used were mean power (Personal Sense of Power scale), condition (low anxiety versus anxiety-inducing), and an interactive factor of condition and power. The

personal sense of power scale was centred (z scored), while condition assignment was effects coded (low anxiety = -1, and anxiety-inducing = 1), as follows the criteria of Aiken et al (1996). The dependent variable used was the honesty score, measured from individual's participation in the broken promise paradigm.

2.4.2 Brain Data

For computation of the P300, EEG recorded during the Auditory Oddball Paradigm was digitally filtered between 0.1 and 30 Hz, this was done to remove data that was too fast or slow to be viable brain data. Artefacts were defined in each trial as amplitudes $\pm 100 \mu\text{V}$. For each artefact-free trial, a 1000-ms epoch of EEG signal locked on the stimulus across startle trials for the P300_startle and standard trials for P300_standard; this window started 200 ms before and 800 ms after the response. Each 800 ms window after response was baseline corrected using the -200 and 0 ms window before the stimulus. The P300 was quantified as the average amplitude across respective trials between 250 ms - 450 ms after response at the F3 and F4 nodes.

To measure reactions to anxiety, emotional and motivational mechanics are able to be measured through the interpretation of the P300 brain wave. This event-related potential allows us to make conclusions of how participants are reacting differently based on their personality attributes, and condition assignment. A moderated multiple regression was used with the dependent variables used being readings of the P300 at the F3 and F4 nodes during the standard noise, startle noise, and the measured difference between participants reactions to the startle, and standard sound. The independent variables used were power, condition and the interaction factor of power and condition.

2.4.3 Personality Traits

A correlation analysis was used to determine whether or not relationships existed between certain personality attributes and a personal sense of power. Previous research has shown much evidence of links between specific personality traits and a sense of power, therefore we looked to further these results and have more information for our own interpretation. The independent variables included measures of the behavioural activation and inhibition systems (BISBAS scale), extraversion and emotional stability (Short form Big5 personality trait scale) and self-esteem (Explicit self-esteem). With the dependent variable of subjective power used (Personal Sense of Power scale).

2.4.4 Manipulation Check

A one way analysis of variance, and mean difference t statistics were used to analyse and report relationships and differences in self-reported emotions such as anxious, confused, and smart against condition assignment (low anxiety and anxiety-inducing).

CHAPTER THREE

RESULTS

3.1 Manipulation Check

To determine whether the anxiety manipulation was effective, participants were asked to rate a number of emotion attributes on a 1 – 5 likert scale (1 = strongly disagree, and 5 = strongly agree). Of the total 112 participants in the study we received 108 responses to the anxiety emotion. An ANOVA found that the feeling of anxiety was not a significant emotion, $F(1, 108) = 0.001$, $p = 0.981$, that correlated with condition assignment. Participants in the hard condition did not show higher ratings of anxiety ($M = 2.93$, $SD = 1.28$), than those in the easy condition ($M = 2.92$, $SD = 1.12$), $t(106) = -0.024$, $p = 0.981$, 95% CI [-0.454, 0.465].

However, even though the emotion of anxiety was not being consciously elicited, other emotions did show salient differences depending on condition assignment. From the 110 responses to the item of smart, we found that participants in the anxiety inducing condition felt less smart ($M = 2.23$, $SD = 0.91$), compared to participants in the low anxiety condition ($M = 2.77$, $SD = 0.85$); $t(108) = 3.255$, $p = 0.002$, 95% CI [0.213, 0.878]. While the 111 responses to the emotion of confusion found that, participants in the anxiety inducing condition also felt more confused ($M = 3.79$, $SD = 1.03$), compared to those in the low anxiety condition ($M = 3.15$, $SD = 1.12$), which was found to be a significant difference ($t(109) = -3.137$, $p = 0.002$, 95% CI [-1.046, -0.236]).

As part of the manipulation check we also asked participants whether or not they suspected what the purpose of our study was, as well as whether or not participants responded accurately to the questions given. Out of the total 112 participants, 111 participants responded with 17% having an accurate idea of the purpose of our study, and 81% not having any

suspensions of the purpose of our study. While 90% of participants reported that they answered the given content as accurately as possible.

3.2 Main Effects

We hypothesised that individuals with high power will be more likely to be selfish, and therefore dishonest, after the anxious experience. To examine this, we ran a moderated multiple regression (West, Aiken, & Krull, 1996), to analyse both continuous and categorical variables, as well as the interactive effect. We predicted participant's honesty scores based on their centred-scored personal sense of power (1 strongly disagree – 5 strongly agree likert scale), and condition assignment (effects coded; -1 low anxiety, 1 anxiety inducing), and the interaction term of these variables. As seen in table 1, a significant regression equation was found, $F(3, 108) = 2.785, p = 0.044$, with an $R^2 = 0.72$. Individually, we found that condition assignment significantly predicted participants honesty scores ($B = 0.084, t(107) = 2.709, p = 0.008$), however, neither mean power, $B = -0.014, t(107) = -0.434, p = 0.665$, nor the interaction term as seen in figure 1, $B = 0.024, t(107) = 0.725, p = 0.470$, significantly predicted participant's honesty scores.

Table 1:

Summary of Multiple Regression Analysis for Variables Predicting Participants' Honesty Scores (N = 111)

	B	SE B	β
ZPower	-0.014	0.033	-0.042
Condition	0.084	0.031	0.253*
Interaction	0.024	0.033	0.070
R²			0.72
F			2.785*

* $p < 0.05$. ** $p < 0.01$.

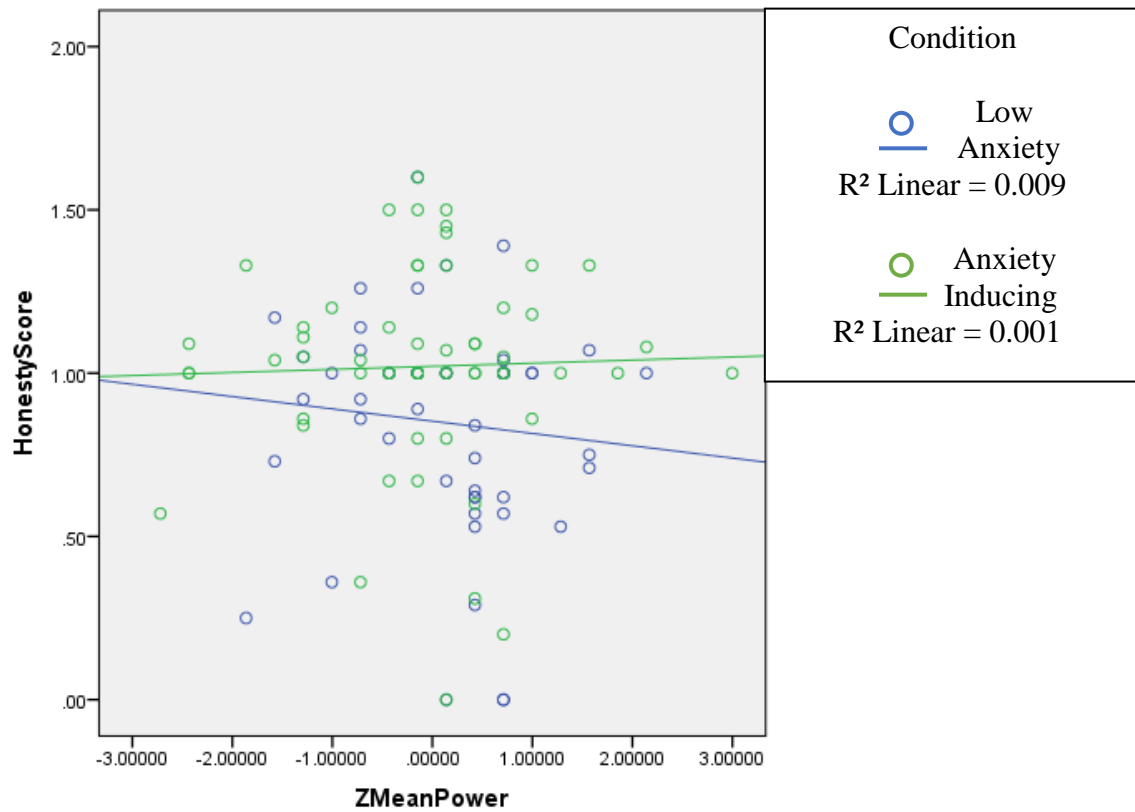


Figure 1. Interaction between individual's personal sense of power, and condition assignment on the honesty score.

To further our understanding of an individual's personal sense of power, we ran a correlation analysis with personality traits that are associated with the attribute of power. We found that the traits behavioural activation ($r(110) = 0.316, p = 0.001$), self-esteem ($r(110) = 0.489, p = 0.000$), extraversion ($r(110) = 0.457, p = 0.000$), and emotional stability ($r(110) = 0.380, p = 0.000$), were all significantly correlated with power. This showed that individuals with power also showed the traits of behavioural activation, high self-esteem, extraversion, and emotional stability.

3.3 Brain Data

Using the Emotiv EPOC headsets we were able to observe the participants P300 and N200 brain potentials for the duration of the study. By focusing on the brain waves during the oddball paradigm where participants listened to a series of sounds with randomly included static noises we are able to see the different reactions based on individual differences. This is

based on readings from certain electrodes on the Emotiv EPOC headset, which give us the clearest and most accurate readings of the P300 waves; specifically, the F3 and F4 electrodes. Figure 2 shows the average responses of participants toward the standard, and startle stimulus, plus the average difference in wave amplitude in response to the standard and startle stimulus.

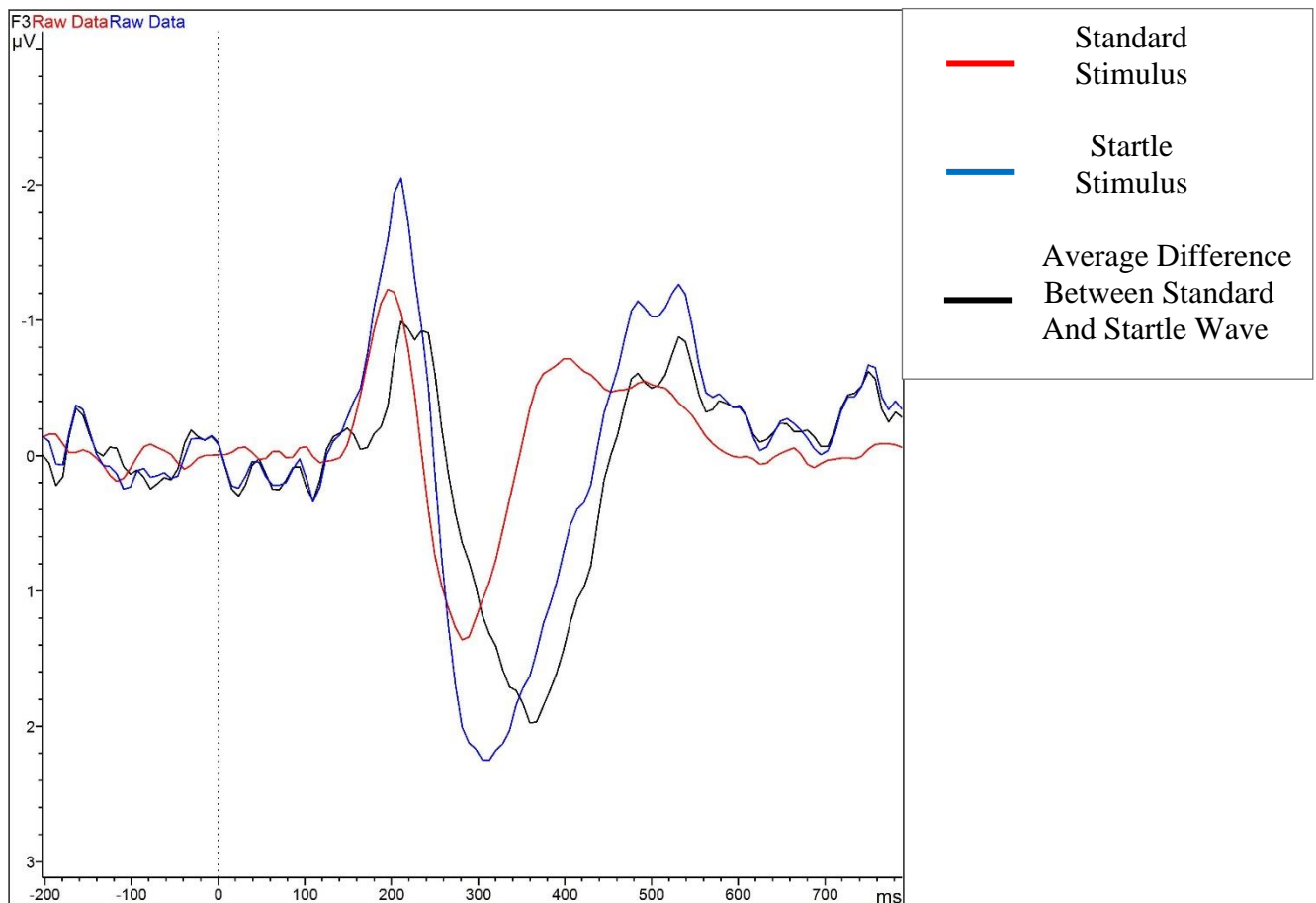


Figure 2. Average event-related brain potential waveforms at the F3 electrode, elicited by participant's in response toward standard and startle stimulus.

3.3.1 Condition, Power Interaction

Through a moderated multiple regression we found on the F3 electrode that there was a significant interaction effect of power and condition on the average size of peak P300 amplitude in reaction to the startle stimulus, $F(1,108) = 6.465$, $p = 0.012$, $\eta_p^2 = 0.056$. By extending our analysis through PROCESS (Model 1) for SPSS, we found that the interaction was significant for high power individuals, with there being a significant relationship between condition assignment and average P300 amplitude in reaction towards the startle stimulus ($b = -2.4211$, $t(108) = -2.6241$, $p = 0.0099$), as can be seen in figure 3 with high power individuals showing a smaller average P300 in response to the startle stimulus who were in the anxiety inducing condition.

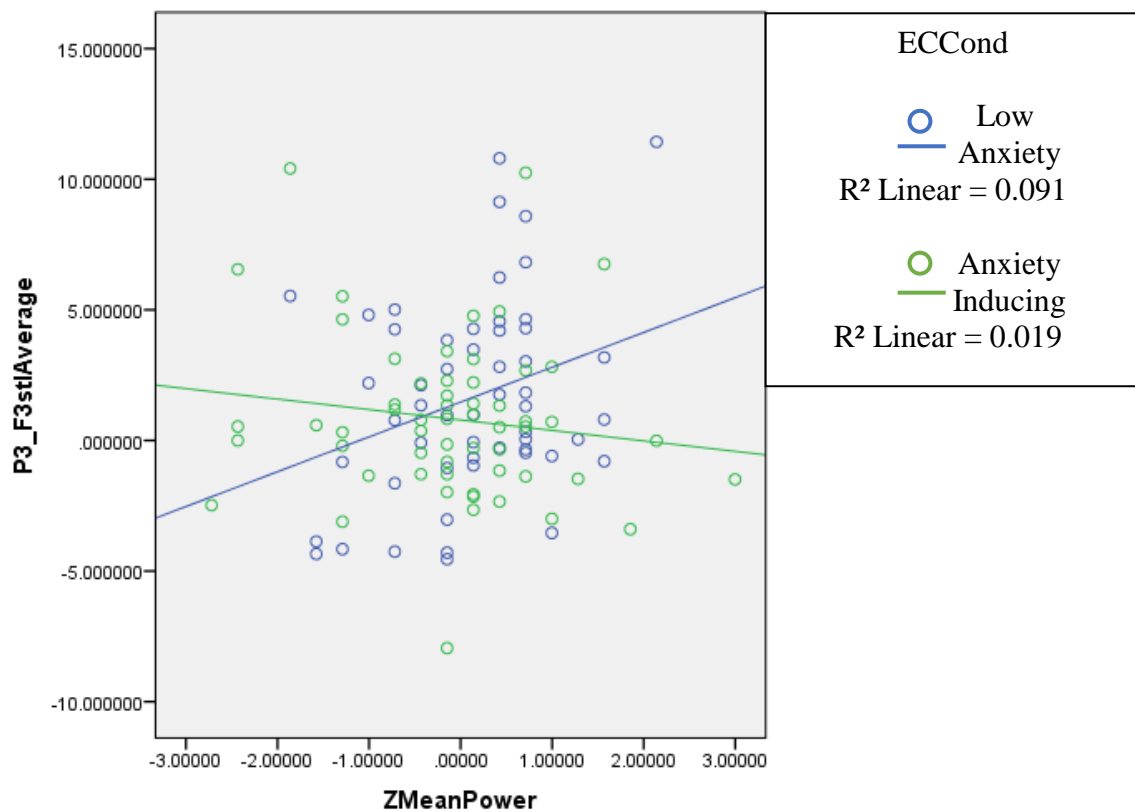


Figure 3. Interaction between individual's personal sense of power and condition assignment, on average P300 amplitude in reaction to the startle stimulus at the F3 electrode.

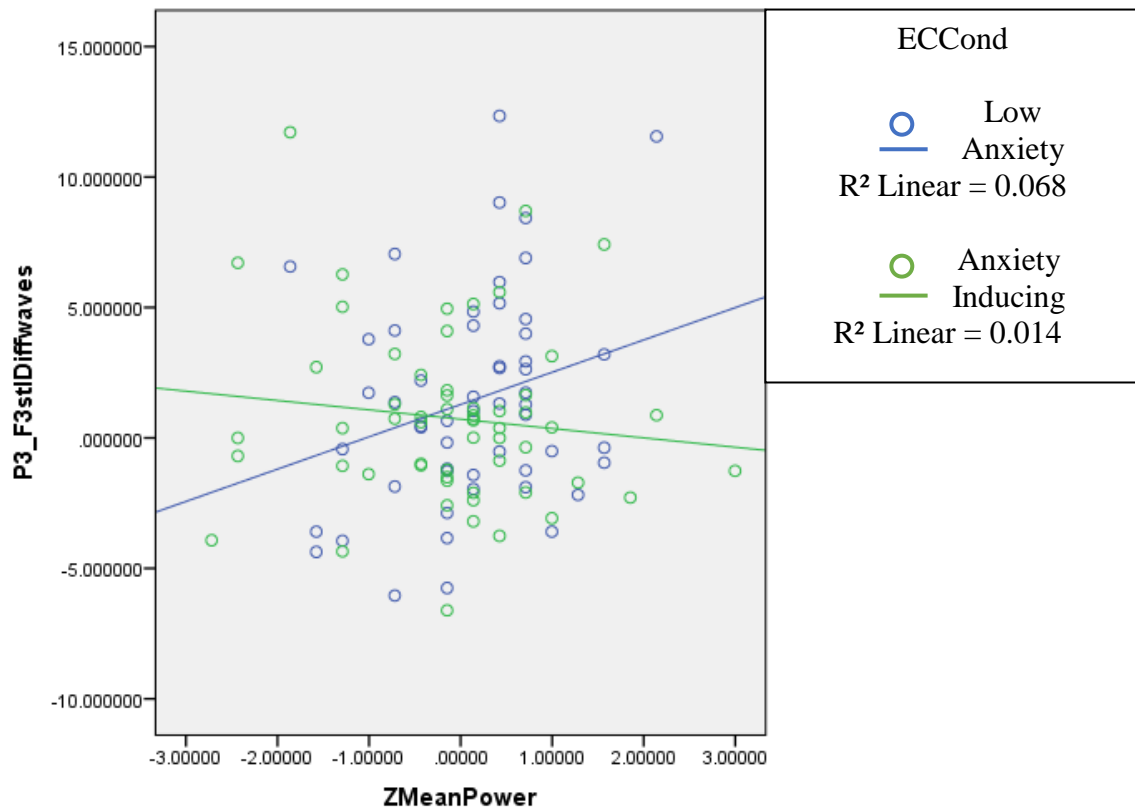


Figure 4. Interaction between individual's personal sense of power and condition assignment on the average P300 difference score in reaction to the startle and standard stimulus at the F3 electrode.

A measurement of the average difference in P300 amplitude in reaction towards the standard and startle stimulus found that there was a significant interaction effect, $F(1, 108) = 4.722$, $p = 0.032$, $\eta_p^2 = 0.042$. Further analysis with PROCESS (Model 1), showed that high powered individuals in the anxiety inducing condition showed a smaller average P300 difference (figure 4) in reaction towards the standard and startle stimulus ($b = -2.1598$, $t(108) = -2.1715$, $p = 0.0321$).

3.4 Exploratory Analysis

Due to our results not following our predictions, further exploratory analysis was completed for points of focus for future research. With an emphasis on the relationship between certain personality attributes and a personal sense of power, we further delved into the contribution of an individual's level of emotional stability and how this may have confounded our results. Emotional stability aforementioned is positively correlated with a personal sense

of power, we therefore looked at how emotional stability affected individuals' event-related potentials (P300) towards the standard and startle stimuli depending on their condition assignment (low anxiety versus anxiety inducing).

A significant interactive effect, $F(1, 108) = 5.918, p = 0.017, \eta_p^2 = 0.052$, of condition and emotional stability on the F4 electrode was found for the difference in peak P300 amplitude in response to standard and startle stimuli. This shows that P300 amplitude is related to individual's emotional stability and whether or not they were in the low anxiety, or anxiety inducing condition. Figure 5, therefore shows, that individuals who were high in emotional stability in the anxiety inducing condition, were less vigilant towards the startle stimulus and therefore showed a smaller peak P300 amplitude difference.

Finally we also looked at the effect of the interactive relationship between emotional stability, and condition and their individual effects and predictive ability on a participant's honesty score. A moderated multiple regression predicted participants' honesty score based on the centred mean emotional stability scores (1 (strongly disagree) – 5 (strongly agree) likert scale), and the effects coded condition type (-1 low anxiety, 1 anxiety inducing). As seen in table 2, a significant regression equation, $F(3, 108) = 5.365, p = 0.002$, with an $R^2 = 0.130$. While individually we find that condition is again a predictor of honesty score, $B = 0.082, t(107) = 2.754, p = 0.007$, as well as finding a significant interactive effect of emotional stability and condition on an individual's honesty score, $B = 0.076, t(107) = 2.464, p = 0.015$. There was no significant effect between emotional stability and condition, $B = -0.058, t(107) = -1.887, p = 0.062$. This analysis showed that honesty score was affected by an individual's emotional stability, however, this was dependent upon which condition they were assigned too. Specifically, participants in the anxiety-inducing condition.

Table 2:

Summary of Multiple Regression Analysis for Variables Predicting the Average P300 Difference score (N = 112)

	<i>B</i>	<i>SE B</i>	β
Emotional Stability	-0.058	0.031	-0.175
Condition	0.082	0.030	0.248**
Interaction	0.076	0.031	0.228**
R²			0.130
F			5.365**

* $p < 0.05$. ** $p < 0.01$.

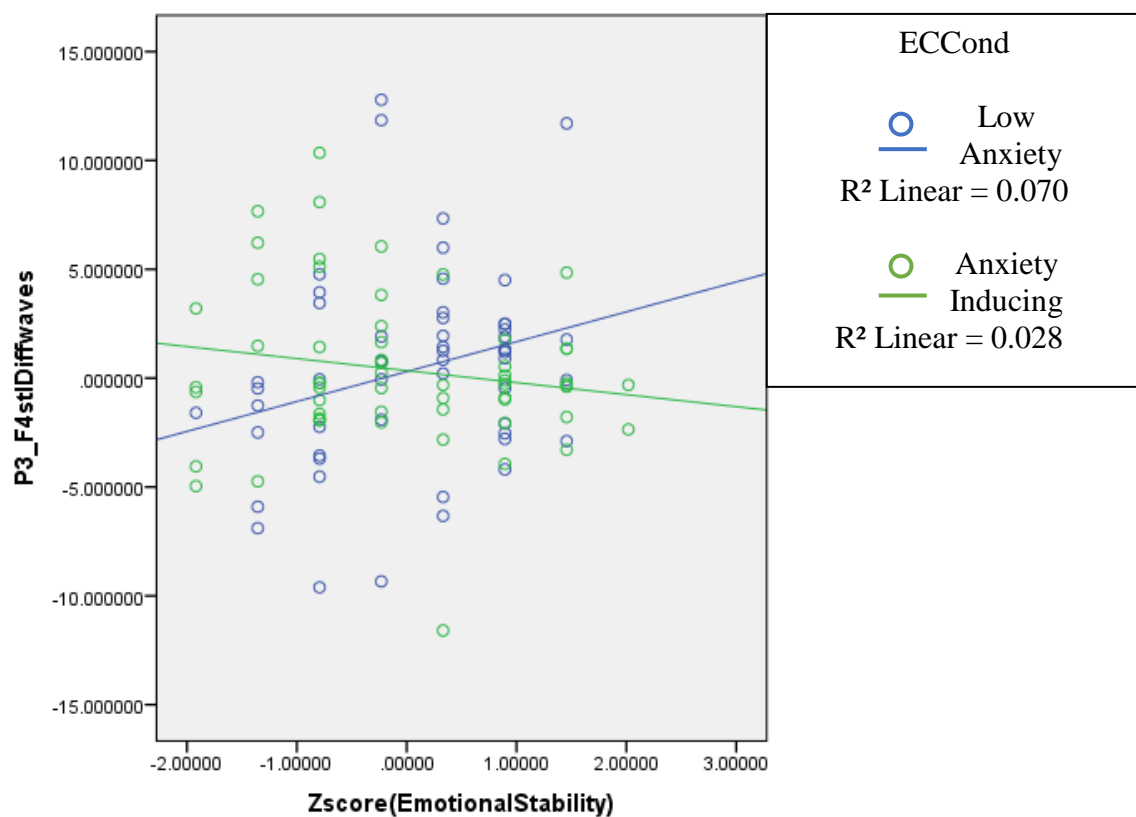


Figure 5. Interaction between individual's emotional stability and condition assignment on average P300 difference score in reaction to the startle and standard stimulus at the F4 electrode.

CHAPTER FOUR

DISCUSSION

4.1 Summary of Findings

Does power corrupt? Though a popular idea, research evidence is mixed on the topic with some studies showing power as corruptive, and as a selfless trait. From a person x situation perspective we examined if power corrupts when a powerful individual is exposed to an anxiety inducing experience. Anxiety causes exuberant, personal goal pursuits, and powerful people prioritise selfish pursuits. We predicted that high powered individuals who were made to feel anxious would be more likely to act in a selfish, and immoral manner, compared to high powered individuals who were not made to feel anxious. To further our conclusions, we also predicted that there would be disparities in individual's event-related potentials depending on their condition assignment, and level of power. More specifically, we expected that high powered individuals in the anxiety-inducing condition would show a smaller peak P300 amplitude compared to low powered individuals in the anxiety-inducing condition, due to differences in vigilance caused by the anxious event.

Contrary to our expectations, we found that high power individuals who were made to feel anxious did not become more selfish and immoral to gain a monetary reward. Further, no significant differences were found between participants with a high or low personal sense of power. Individually power and condition assignment did not show significant differences in peak P300 amplitude. However, an interaction effect was found. Individuals with a high sense of personal power who were in the anxiety inducing condition were found to have a significantly smaller peak P300 amplitude compared to individuals with a low sense of personal power who were in the anxiety-inducing condition. This interaction may also explain the contradictory results of our main effect, where high powered individuals did not become more

selfish, and immoral. These results showed that even though a sense of power is most often associated with being a trait that corrupts our thoughts and decision, in our research, a personal sense of power did not corrupt, and this was also not exacerbated due to exposure to an anxious event.

Our findings may be explained due to the personality traits that are correlated with individuals of power. As previous studies have shown (C. Anderson et al., 2012; C. Anderson et al., 2001; Fast et al., 2009; Galinsky et al., 2003; John & Srivastava, 1999; Judge et al., 2002; Keltner et al., 2003; Kraus et al., 2011; Smith & Bargh, 2008; Wojciszke & Struzynska-Kujalowicz, 2007), power has been associated with Big5 traits, self-esteem, and the behavioural inhibition and activation systems. We found that power was significantly positively correlated with self-esteem, behavioural activation (BAS), and two of the Big5 personality factors, extraversion and emotional stability (neuroticism). Therefore, individuals with power are more goal oriented (BAS), confident and self-assured (extraversion, and self-esteem), and less neurotic (emotionally stable). Because of this, individuals with a high sense of power may have actually been less affected by the feelings of uncertainty, and therefore will be less likely to react with extreme selfishness.

4.2 Practical and Theoretical Implications

The present study found that exposure to anxiety did not corrupt powerful people. We can therefore assume that a sense of power may not be the dominant factor affecting our moral decision making. Rather our underlying individual differences such as variances in personality traits, beliefs and values can be assumed to be more dominant in individuals during an uncertain situation. Further, this suggests that an individual with a high sense of power does not necessarily have traits, values, or beliefs that will have negative consequences toward other individuals. This opens opportunities for extended research to understand which particular

personality traits may protect from the corrupt effects of power, and what traits may put individuals more at risk. Knowledge of individual's cherished beliefs and values would also be advantageous to understand if certain beliefs are more or less likely to become salient when reactive approach motivation is activated.

4.3 Limitations and Future Research

The current research has several limitations. First, our measurement of power, though used in numerous previous studies, measured a subjective sense of power. Because of this, an individual's sense of power may not have been a salient trait throughout the study. Future research could therefore instead manipulate an individual's sense and position of power through the use of priming. Priming enables researchers to manipulate participants by creating an acute awareness of a certain experience which causes behaviour changes in on going activities (Larsen & Buss, 2008). By manipulating an individual's sense of power and making this more salient (high or low), we may get a stronger effect of power, with participants being more aware of their status and therefore responding accordingly. Secondly, our anxiety manipulation may not have caused the anxious response we expected. Even though previous research has shown this to be an effective anxiety manipulation, our manipulation check showed that there was no significant difference in feelings of anxiety in the anxiety-inducing and low anxiety condition. For example, both the low anxiety and anxiety inducing condition may have provoked feelings of anxiety, and therefore we may not have shown the differences between the two conditions as strongly as expected. It is also possible that the feeling of anxiety was not the main emotion elicited while completing the anxiety manipulating task, and therefore individuals may not have reacted in the way we would have expected due to difference psychological processes. For example our manipulation check showed that individuals in the anxiety-inducing felt significantly more confused, and less smart compared to those in the low anxiety condition.

Previous studies have also found that the setup of economic money games have an important part in the way in which participants may respond to them. Dana, Weber, and Kuang (2005), found that when a situation is transparent, for example, in the broken promise paradigm where the investor acknowledges the participant's promise choice, and acts based on this decision, the participant is more compelled to make a decision that favours both themselves and the investor, due to the salience of their decision making and the consequences that may arise due to this.

Further, Galinsky et al. (2003), found that individuals with power also changed the way they acted depending on whether they thought their reward came from a shared resource (commons dilemma), or whether they thought their reward came from a source that publically used resource (public-goods dilemma). They found that when the game represented the commons dilemma, they were more likely to take more for themselves; however, when the game represented the public-goods dilemma they were more likely to contribute their winnings. Therefore, depending on whether our participants felt that they could be held responsible for their actions based on the transparency of their actions, they may have been more likely to be more honest and be seen as selfless. The same is seen, depending on whether or not participants thought they were taking a reward for themselves, or taking away from a public source. Individuals may have acted accordingly to be seen as acting in a selfless manner, as well as not wanting to take from a resource that they themselves may benefit from. Future research could benefit from having multiple versions of the same economic game, to decipher whether or not this changes the way in which participants play the game.

Lastly, even though morality is often thought of as selfless, "other regarding" and communally orienting (Dana et al., 2007; Walker, 2013). Moral actions have not always been found to be wholly other-regarding. A study by Dana et al., (2007), looked at the motivations behind individuals moral actions and stated that "the underlying motivation driving much fair

behaviour observed in experiments might be self-interest, coupled with a desire to maintain the illusion of not being selfish” (Dana et al., 2007, p. 3). This suggests that individuals are actually behaving in a way that makes them seem moral and good, but these actions are actually motivated through self-regard of being seen positively. Lawrence Walker (2013) did a review to give evidence for the claim that morality is not just selfless, but also self-regarding. The conclusion from his review finds that individuals who are moral are communally oriented, however, acting in a moral way is self-enhancing for these individuals. Therefore, “when moral concerns become core to identity and motivation, then their pursuit is enhancing to the self” (Walker, 2013, p. 38). Consequently, the moral decision for our participants high in personal power to be honest may have actually been a selfish act that was beneficial to themselves.

4.3.1 Exploratory Analysis

In our exploratory analysis, we found that individuals with high emotional stability showed a smaller peak P300 amplitude in the anxiety-inducing condition compared to individuals with low emotional stability. This shows that emotional stability acted as a type of buffer of the expected elicited anxious emotions. Because of the relationship found between emotional stability and a personal sense of power, future research should focus on looking at how emotional stability and power interact when individuals are exposed to anxious situations, and whether or not this buffer stops selfish reactions to anxiety.

4.4 Conclusions

By inducing feelings of anxiety and uncertainty in our participants we expected individuals to explicitly pursue their cherished beliefs and values. People with a high sense of power prioritise and value personal gain. We thus expected that powerful people would become the most selfish after an anxious experience. However, our expectations were not met. We can therefore conclude that perhaps it is not the amount of power that matters, but what an

individual's salient values and beliefs are. Two prime examples of how individuals can differ in their values, and approaches of how they use their wealth and power are Donald Trump and Bill Gates, two of the world's wealthiest individuals. Bill Gates, a well-known philanthropist, has generously donated to numerous charities as well as also establishing his own charitable foundation for scientific research in 2007. Donald Trump on the other hand, has been involved in many sexual assault allegations, bad business dealings, and previously also been accused of racial discrimination. Our results similarly reflect how power does not necessarily always corrupt.

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APPENDICES

Appendix A: Information Sheet

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INFORMATION SHEET PSYC100 Inlab Participants

Study Name: Your personality and brain activity.

Researchers: Dr Kyle Nash, Department of Psychology, University of Canterbury
 Matthew Johnston, Department of Psychology, University of Canterbury
 Ellinor King, Department of Psychology, University of Canterbury
 Brendan Lim, Department of Psychology, University of Canterbury
 Maddie Weston, Department of Psychology, University of Canterbury
 Raissa Woudenberg, Department of Psychology, University of Canterbury

Purpose of Research?

This research investigates patterns of relations among participants' personality dispositions and personal orientations, experiences, preferences, and thought process. It will add to international researchers' growing understanding of how basic processes that underlie personality differences relate to important social phenomena.

What Will You Be Asked to Do?

At the beginning of this study, you may be fitted with an electroencephalography (EEG) cap that has electrodes which will measure electrical activity in your brain throughout the study. Once the electrodes are in place, you will complete several questionnaires that assess personality traits, along with exercises that assess your speed at making accurate categorisations. You may also be asked to describe current goals that are ongoing in your life. At the end of the study, several tasks will assess your cognitive performance on computerised and paper and pencil tasks. There are several parts to this study, of which you will be asked to

do a subset. In total, the study session will take about 30 minutes to complete. The several parts that you may be asked to complete are as follows:

- A) You will rate personality on various questionnaires with items such as, “I am an active person”.
- B) You will be asked demographic questions about your age, gender, and ethnicity, as well as questions about your cultural background and religious orientation.
- C) You will be asked to complete an exercise that requires you to write about a challenging, affirming, or neutral topic in your life. Challenging topics include topics related to difficulties or uncertainties that are part of everyday life, including relationship problems, dilemmas, thoughts about morality, or reflections on going to the dentist; alternatively, some of you may be asked to summarise a challenging passage from a textbook or to read a passage about economics. Your response on all of these task will be used to complement what we learn about your personalities from the questionnaires.
- D) You may be asked about your opinions about social issues, which may include questions about your political or religious views. You will also be asked to rate your feelings toward characters presented in short vignettes that you will read.
- E) You will play a game which will give you an opportunity to earn a cash reward.

Risks and Discomforts:

There are no obvious risks of participation in this research, but some of the questions may be challenging or may require that you reflect on aspects of yourself or life that you may be uncomfortable with. You are free to decline to respond to any such materials.

Benefits of the Research and Benefits to You:

This research may benefit society by contributing to a better understanding of personality processes that underlie people’s opinions, values, goals, preferences, and personalities, more generally. Ultimately, we hope that better scientific understanding of people’s different orientations will contribute to improvements in policies designed to help societies function more optimally and with less conflict.

You may also derive personal benefit from participation in this research insofar as it may contribute to your having a more concrete understanding of the process of social science.

Moreover, many of the questions involve self-reflection, and past participants have commented that they appreciated the opportunity to reflect on themselves and their lives.

Voluntary Participation:

Your participation in the study is completely voluntary. Whether you decide to volunteer, or not, will not influence your relation with the researchers involved in the study, or with the University of Canterbury, either now, or in the future.

Withdrawal from the Study:

You can stop participating, or skip questions or sections in the study at any time, for any reason, if you so decide. If you decide to stop participating, or to skip certain parts, you will still be eligible to receive the points for agreeing to be in the project. Your decision to stop participating, or to refuse to answer particular questions, will not affect your relationship with the researchers, the University, or any other group associated with this project.

Confidentiality:

All information you supply during the research will be held in confidence and your name will not appear in any report or publication of the research. Only research staff will have access to the data, and your name or other identifying information (such as your student number or email address) will not be stored in the same file or location as the data.

Questions about the Research:

If you have any questions about the research in general or about your role in the study, please feel free to contact Dr Kyle Nash (phone: +64 3 364 2987; email: kyle.nash@canterbury.ac.nz).

This research has been reviewed by the Human Ethics Committee of the University of Canterbury (HEC). If you have any questions about this process or about your rights as a

participant in the study, please contact the Chair of The Human Ethics Committee of the University of Canterbury, Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz).

Appendix B: Participant Consent

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PARTICIPANT CONSENT FORM – PSYC100 INLAB

- I have read and understood the description of the above-mentioned project and have had the opportunity to clarify any concerns.
- I understand that my participation will involve completing a confidential questionnaire, if I agree to take part in the research.
- I understand the data I have provided will be deleted after 5 years.
- I agree to publication of results, with the understanding that any information or opinions I provide will be kept confidential. Also that any published or reported results will not identify my name or personal information.
- I agree to follow instructions provided by the experimenter in order to ensure my own safety.
- I understand that all data collected for the study will be kept in locked and secure facilities and will be destroyed after 5 years.
- I am satisfied with all the measures that will be taken to protect my identity and ensure that my interests are protected.
- I understand the risks associated with taking part and how they will be managed.
- I understand that I am able to receive a report on the findings of the study or further information by contacting the researcher at the conclusion of the project, Dr Kyle Nash: kyle.nash@canterbury.ac.nz.
- If I have any complaints, I can contact the Chair of The Human Ethics Committee of the University of Canterbury (HEC), Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz).

By signing below, I agree to participate in this research project (by signing the consent form I indicate that I understand and agree to the research conditions).

I, _____, consent to participate in “Your Personality and Brain Activity”, conducted by Dr Kyle Nash, Ellinor King, Raissa Woudenberg, Brendan Lim, Maddie Weston, and Matthew Johnston.

I have understood the nature of this project and wish to participate. I am not waiving any of my legal rights by signing this form. My signature below indicates my consent.

Participant Signature and Date: _____

Researcher Signature and Date: _____

Appendix C: Debriefing

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DEBRIEFING

Thank you very much for helping us with this research. Your efforts are very much appreciated. You and the other participants completed various versions of the materials. Some of you completed an easy task of reading a passage about statistics and giving your thoughts on it. Others completed a more difficult and anxiety inducing task which involved looking at a statistics problem which was impossible to solve, as sections of it had been removed. It is important that you be assured that any difficulty that you had was not due to your own limitations rather, we selected the passage from a graduate textbook, and omitted the necessary details so that it would be almost impossible to decipher. All participants are unable to make sense of it.

Following this you played a game called the “Broken Promise Paradigm”. In line with past research and our hypotheses, we expected that some participants who completed the challenging, anxiety inducing task would tend to behave in a more self-focused manner when playing the Broken Promise Paradigm. Moreover, we expected that certain personality types would be most prone to react to the anxiety with self-focused behaviour, which is why we asked you so many personality questions at the beginning of the study.

We are sorry we were not able to give you all these details up front, before you began the study. Doing so could spoil the study because some participants might have altered their responses based on their expectations. Accordingly, the study required some deception about some of the materials.

If you wish to acquire a summary of the results of this research or you have a question about the research in general or about your role in the study, please feel free to contact Dr Kyle Nash (phone: +64 3 364 2987 ext. 4947; email: kyle.nash@canterbury.ac.nz). This research has been reviewed by The Human Ethics Committee of the University of Canterbury (HEC). If you have any questions about this process or about your rights as a participant in the study, please contact the Chair of The Human Ethics Committee of the University of Canterbury, Private Bag 4800, Christchurch (human-ethics@canterbury.ac.nz). If completing any of the materials has raised personal issues which find distressing, the following contacts are provided for your convenience:

- UC Health Centre Counselling Services: +64 3 364 2402 (For confidential, professional counselling for UC students).
- Student Support and Services: +64 3 364 2350, +64 3 364 2987, or email studentdevelopment@canterbury.ac.nz. (For confidential peer counselling by UC students for UC students).

Thank you once again for your help with important research. For references to related publications, please see the principle investigators published works, at <https://scholar.google.co.nz/citations?user=ZmERmc0AAAAJ&hl=en&oi=ao>.

Sincerely,

Kyle Nash and the rest of the research team

Appendix D: Anxiety Manipulation

Low Anxiety:

The passage on the next page is a common statistical tool used in Psychology from an undergraduate text book. We are interested in assessing how understandable it is to you. You will first read the passage on the next two screens, and then have two minutes to summarise it as best you can in the space provided. Please try your best to understand and summarise the passage for the duration of the time allocated for this exercise.

Decisions, Decisions, Decisions!

Life places many demands upon us, and one of them is the burden of making decisions that affect our lives and careers. On an abstract level, controlling one's destiny through the decision-making process should be a fulfilling and enjoyable experience. On a more realistic level, however, it often seems that we don't have enough information or the right kinds of information available when we are faced with making an important decision. Because some decisions cannot be put off and because of demands that are placed upon us and that we place on ourselves, some decisions are inevitably made in the face of substantial uncertainty – without all the relevant information and with incomplete understandings of the information we do have.

Before we make decisions that affect us personally, we tend to gather as much relevant information as possible. By making a decision based upon information rather than on impulse, we can minimise any uncertainty we may have about the correctness of the decision. In science, the goal is fundamentally the same. To minimise uncertainty and maximize the availability of relevant information, scientists collect data (measurements from observations that are usually recorded using numbers). Whether in the context of formal research activity ("Is this advertising campaign working?") or our personal lives ("Where should I go to college?") the

goal is to make as informed a decision as possible, backed up with as much relevant data as we can collect.

In a formal research setting, data are carefully collected under controlled conditions so that they will hold the promise of containing needed information. As sound and potentially valuable as data may be, however, they will not yield their information without a struggle. Information is coy. It likes to disguise itself and stay hidden in a jumble of numbers. We have to flush it out into the open using special tools – the tools that comprise statistical analysis. By subjecting the data to formal computational procedures, we can distil the information that is in the data into forms that can be assimilated, understood, communicated, and used for practical purposes. Without the organising and summarising of information that is accomplished by statistical analysis, we would tend to be overwhelmed and confused – aimlessly adrift in a sea of numbers.

To understand the role of statistical analysis as an information gathering tool, it helps to regard the numerical representation of data as a code. If numbers are the coded representations of our observations, we need to crack the code to make available all the information the numbers hold. The techniques of descriptive statistics are, in a sense, decoding devices that pull the information from the data and allow us to see properties and relationships that could otherwise go unnoticed.

Anxiety Inducing:

The passage on the next page is from an introduction to a statistical procedure called Linear Structural Relations, or LISREL. LISREL is a useful tool for analysing causal relations among psychological variables. We are interested in assessing how understandable it is to you. You will have three minutes to read the passage on the next two screen, and then two minutes to summarise it as best as you can in the space provided. Please try your best to understand and summarise the passage for the duration of the time allocated for this exercise.

The Structural Equation Model

The structural equation model refers to relations among exogenous and endogenous variables. Most often, these variables are constructs and therefore are unobserved. Such variables are also referred to as latent, or true, variables. Latent variables are frequently encountered in the social sciences. In fact, constructs such as intelligence, motivation, attitudes, ambition, anxiety, aspirations, and cognitive styles play a crucial role in the social sciences and in the social science research. In LISREL, latent dependent, or endogenous, variables are designated as η (eta), whereas latent independent, or exogenous, variables are designated as ξ (xi).

The structural equation model is:

$$B\eta = \Gamma\xi + \zeta$$

When η (eta) is an m by 1 vector of latent endogenous variables; ξ (xi) is an n by 1 vector of latent exogenous variables; B (beta) is an m by m matrix of coefficients of the effects of endogenous on endogenous variables; Γ (gamma) is an m by n matrix of coefficients of the effects of exogenous variables (ξ 's) on endogenous variables (η 's); ζ (zeta) is an m by 1 vector of residuals, or errors in equations. It is assumed that the means of all the variables are equal to zero – that is, that the variables are expressed in deviation scores. Also it is assumed that ζ and ξ are correlated, and the B is non-singular.

The Measurement Model

The measurement model specifies the relations between unobserved and observed, or latent and manifest variables. Two equations describe the model:

$$y = \Lambda\eta + \epsilon$$

Where y is a p by 1 vector of measures of dependent variables; Λ (lambda) is a p by m matrix of coefficients, or loadings, of y on the unobserved dependent variables (η); ϵ (epsilon) is a p by 1 vector of errors of measurement of y .

$$x = \Lambda \xi + \delta$$

Where x is a q by 1 vector of measures of independent variables; Λ (lambda) is a q by n matrix of coefficients, or loadings, of x on the unobserved independent variables (ξ); and δ (delta) is a q by 1 vector of errors of measurement of x .

Appendix E: EMOTIV EPOC+ 14 Channel Mobile EEG